DRAFT
15 July 1985

The Attentive Public for Soviet Science and Technology

by

Linda L. Lubrano
School of International Service
The American University
Washington, D.C. 20016

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	15 Jul 85	Final: JULY 1985

4. TITLE AND SUBTITLE
THE ATTENTIVE PUBLIC FOR SOVIET SCIENCE AND TECHNOLOGY

5. FUNDING NUMBERS
C: NONE

6. AUTHOR(S) L. Lubrano

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Soviet Interview Project
Univ. of Illinois
Urbana, IL 61801

8. PERFORMING ORGANIZATION REPORT NUMBER
NONE

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Office of the Secretary of Defense
Office of the Director of Net Assessment
Rm 3A930, The Pentagon
Washington, D.C. 20301

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
85-3372

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
A. Approved for public release; distribution is unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT
Compares Soviet emigre attitudes toward science and technology with the atitudes of the American public in the 1970s.

14. SUBJECT TERMS
Soviet Public Perceptions Science And Technology

15. NUMBER OF PAGES
50

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	SAR

THE ATTENTIVE PUBLIC FOR SOVIET SCIENCE AND TECHNOLOGY

Linda L. Lubrano

The American University - Washington, D.C.

Data for this study were produced by the Soviet Interview Project. This project was supported by Contract No. 701 from the National Council for Soviet and East European Research to the University of Illinois Urbana-Champaign, James R. Millar, Principal Investigator. The analysis and interpretations in this study are those of the author, not necessarily of the sponsors.

This paper is one of a set that present the first formal findings of the General Survey Questionnaire. The instrument was administered to 2,793 Soviet emigrants who arrived in the United States between January 1, 1979 and April 30, 1982. The papers will be discussed at a conference of the Research Team with Government specialists and others at Airlie House, Virginia, October 27-29, 1985. The contents of the papers will not be presented at the conference in detail, but the findings will be briefly summarized. The purpose of the conference will be to subject the papers to rigorous analytic assessment, and general familiarity with the subjects discussed will be assumed.

Preface

Data for this study were produced by the Soviet Interview Project. The author conducted preliminary research on the Project while she was a National Fellow at the Hoover Institution, Stanford University. The preparation of this paper was made possible by a Faculty Summer Research Grant from The American University. The author expresses her thanks to Janet Schwartz for comments on an earlier draft and appreciation to Jim Roberts and Carol Zeiss for their technical assistance.

"The Attentive Public for Soviet Science and Technology" is part of a series of reports on different portions of the Soviet Interview Project. It will be preceded by an introductory chapter on the Project's methodology, including the research design, sampling procedures, main variables, and standard terminology. It is assumed, therefore, that the reader will be familiar with the methodology of the Project before reading this paper.

The Soviet Interview Project was supported by Contract No. 701 from the National Council of Soviet and East European Research to the University of Illinois, Urbana-Champaign, James R. Millar, Principal Investigator. The analysis and interpretations in this study are those of the author, not necessarily of the sponsors.

The Attentive Public for Soviet Science and Technology

Studies of the American Attentive Public for Science and Technology

With the recognition of scientific and technological change as central components of national and international policies, scholars, policymakers, and public opinion specialists in the United States have studied the views of the American public toward science and technology at least since the late 1950s.[1] The most comprehensive American studies were done in the 1970s amidst concern that the high level of public support for science had eroded during the previous decade. This concern prompted the National Science Foundation to sponsor a major survey of public attitudes toward science and technology from 1978 to 1980.[2] The results of the survey showed that the American public retained a generally positive view of organized science and had high expectations for science's future accomplishments. Moreover, the proportion of the population interested in, and

---

[1]In their studies of the American public, scholars have made a distinction between science and technology. See, for example, T. R. LaPorte, "Indicators of Public Attitudes Toward Science and Technology," Scientometrics, Vol. 2, No. 5-6 (1980), pp. 439-448. Different results for each were reported in Jon Miller, Robert Suchner, and Alan Voelker, Citizenship in an Age of Science (New York: Pergamon Press, 1980), pp. 93-98, 125-133, and passim. This distinction was not made in the Soviet Interview Project.

[2]Jon Miller, Kenneth Prewitt, and Robert Pearson, The Attitudes of the U.S. Public Toward Science and Technology (Chicago: National Opinion Research Center/University of Chicago, 1980).

knowledgeable about, science and technology issues had more than doubled in size (from 8 percent in 1957 to 18 percent in 1979) partly as a consequence of increases in the level of education of the adult population. It was true, nonetheless, that the degree of public support for science was lower in 1979 than it had been two decades earlier. This was due mainly to an increase in citizen awareness of the societal risks associated with contemporary research and development. Thus the survey confirmed a growing skepticism toward science and technology among the more informed American public.[3]

As with other areas of public policy only a relatively small proportion of the population is highly knowledgeable about, and strongly interested in, science and technology issues. Several American scholars have found it useful, therefore, to use the concept of the "attentive public" to identify this portion of the population and to distinguish its views on science and technology from the views of people who are "nonattentive."[4] In a

---

[3]In 1957, for example, 87.7 percent of the American public thought that the benefits of scientific research outweighed the harm, whereas only 70.5 percent thought so in 1979. See Science Indicators 1980 (Washington, D. C.: National Science Foundation, 1981), pp. 160-163.

[4]The concept of the attentive public for science and technology was adapted from Gabriel Almond's model of policymaking in The American People and Foreign Policy (New York: Harcourt, Brace, & Co., 1950) and developed by Jon Miller et al. in Citizenship in an Age of Science, op. cit. Gerald Holton, Daniel Yankelovich and others dispute the validity of the concept of attentiveness which, they argue, presumes an elitist model of public policy formation. Their study demonstrates that when given adequate information and time, members of the previously "nonattentive public" are fully capable of formulating and articulating their own views on science and technology issues. See Science Policy Priorities and the Public, unpublished report

1978 nationwide study of citizen attitudes toward science and technology, Jon Miller traced the development of the attentive public among approximately 4700 young adults. He found that education was the most significant factor in predicting attentiveness to science and technology issues. High school students who went to college ranked substantially higher than did noncollege students on three measures of attentiveness: interest in science and technology, knowledge about science and technology, and the acquisition of information on science and techology issues. The importance of education in developing one's attentiveness to science and technology coincided with the presence of other factors in the students' backgrounds. The most attentive young adults, for example, were those who came from families with high socio-economic status, especially when there were frequent discussions of public issues in the home. The attentive students were more likely to be male, to aspire toward high-status occupations, and not to hold strong religious beliefs.[5]

In their 1979 study of 1635 adults, Jon Miller, Kenneth Prewitt, and Robert Pearson found that the level of formal education remained the major predictor of attentiveness to organized science.[6] Education correlated directly with interest

---

by the Public Agenda Foundation to Harvard University, n.d. The research design of the Soviet Interview Project does not allow for a testing of the Holton thesis.

[5]Miller, Suchner, and Voelker, pp. 193-199.

[6]The concept of "organized science" as used by Prewitt et al. refers to the institutional practice of both science and

in organized science, with knowledge about organized science, with general information consumption, and with the consumption of specialized science information. There was also a significant association (although much weaker than for education) between the respondents' level of political activity and their attentiveness to organized science. Men and younger people were generally more knowledgeable about science, and men tended to read specialized science literature more than women did. But the relationships between gender or age, on the one hand, and attentiveness to science, on the other, were relatively weak. Prewitt and his colleagues found even less of a direct association between employment and attentiveness to science. Those who were employed in professional and technical occupations scored highest on interest in organized science, on knowledge about organized science, and on the consumption of specialized science information. But the holding of a research position within the science sector explained only 2 percent of the variance in attentiveness compared with 36 percent of the variance explained by the education variable. The authors suggest, therefore, that the attentive public for organized science in the United States is more than an occupationally-oriented self-serving interest group. Rather, it is a public that potentially shares broader concerns on other issues as well.[7]

The identification of an attentive public for science and

---

technology. That is the way the term will be used in this paper.

[7]Miller, Prewitt, and Pearson, pp. 10-59.

technology is extremely useful in the delineation of American responses toward science, scientists, and science policy. Citizens who are more attentive to organized science tend to have a more optimistic outlook on the overall benefits of science and technology vis-à-vis the potential risks. While the general level of public confidence in science remains high, the attentive public is more likely than the nonattentive public to believe that science and technology have done more good than harm in the past, and the attentives are more confident that science and technology can solve certain problems in the future. One can argue that confidence in organized science, along with positive peceptions of scientific leaders, predispose citizens to support programs for the funding of scientific research and development. Indeed, Prewitt and his colleagues found that there was widespread support for programs that contribute to the advancement of knowledge, per se, and for programs that are oriented toward the scientific and technical solution of practical problems. Members of the attentive public were more likely than the nonattentives to support programs of fundamental research and the principles of unrestricted scientific inquiry. Yet, this support was not unlimited. There was a consensus on the need to restrict certain areas of research, such as the creation of new life forms, where both the attentives and nonattentives apparently shared similar ethical and practical concerns.*

---

*Sixty-nine percent of the nonattentives and forty-nine percent of the attentives wanted restrictions on the study of new

The same consensus was evident in the differentiation of public support for scientific and technical solutions to practical problems. Both the attentive and nonattentive public preferred that money be spent on programs that had some domestic social value. There was a high degree of agreement, for example, on the priorities of scientific research in the areas of energy, health, educational improvement, pollution, and food production. There was generally less support for the improvement of weapons systems and for the exploration of outer space. As part of a case study of three science-related issues, Miller, Prewitt, and Pearson looked at the subject of space exploration in greater detail. They found that, in contrast to the high profile of the space program during the 1960s, the American public no longer considered the exploration of space to be a salient issue in the 1970s.[9] The agreement between the attentive and nonattentive public on the relative priority of the space program (compared, for example, with energy and health programs) demonstrates that the utility of the concept of an attentive public for organized science may be limited to those policies that affect science and technology directly. No matter how saturated the space issue is with scientific and technical characteristics, the public most probably sees it as one that affects the distribution of social

---

life forms. Miller, Prewitt, and Pearson, p. 85.

[9]Space exploration ranked tenth and twelfth (out of 12 research areas) by the attentive public and the nonattentive public respectively, Miller, Prewitt, Pearson, pp. 84-96. These views may have changed in recent years due to the "star wars" controversy.

goods and services. It is evaluated, therefore, not as a science and technology issue, per se, but as a matter of general public policy.[10]

Through the Soviet Interview Project we have the opportunity to compare Soviet emigre attitudes toward science and technology with the attitudes of the American public in the 1970s. First we must identify the attentive public for science and technology issues. Do the observations about the attentive public in the United States hold true also for the Soviet emigre population? Do similar background characteristics separate the attentive public from the nonattentive public? If they do, can we then use the concept of attentiveness as a key to the understanding public attitudes toward science and technology among Soviet emigres? Where are there significant differences between the attentive public and the nonattentive public, and where is there substantial consensus?

In reviewing the following analysis the reader should remain aware of the limitations in our data. We did not have access to a sample of Soviet citizens comparable to those surveyed by Prewitt and his colleagues. The attentiveness and attitudes of the emigre public may not be representative of the Soviet public as a whole. We feel confident, nonetheless, that cross-tabulations of the characteristics of the emigre population are valid, and the results may suggest relationships that exist

---

[10]This interpretation is reinforced by the fact that Americans had positive attitudes toward space research, but gave it low priority only in relation to other programs.

also in the USSR. In addition to limitations in sample selection, our study is limited further by the fact that the questions used in the Soviet Interview Project are not the same as those used in studies of the American public. Because of this, we cannot measure attentiveness to science and technology in the same way, nor can we establish a direct correspondence between American and Soviet perceptions of science and technology issues. The best we can do is to discuss the general applicability of American studies to our research on Soviet emigres, both in the formation of key variables and in the testing of hypotheses.

Characteristics of the Attentive Public Among Soviet Emigres

Studies of American citizens emphasize the importance of one's educational level in formulating attitudes toward public policy. Jon Miller and others have found that people with higher levels of education are more likely to keep informed about current events, especially in relatively abstract policy areas such as science and technology. The formation of these attitudes appears to be less salient in the Soviet Union where fewer people have the opportunity to influence high-level policy decisions. Positive public attitudes are still important, however, because they provide the popular support necessary for the Soviet regime to implement policy effectively. While people with higher education in general are more likely to pay attention to science and technology policy, this is especially true if scientific and technical information is related, directly or indirectly, to a

person's occupation. Moreover, for citizens in science-related occupations there are opportunities to influence Soviet policy at lower levels. As a society becomes more dependent on high-level technology, the status of technical specialists rises and the size of this potentially influential public continues to expand.

Who has the best chance of receiving higher education and obtaining employment in high status occupations? The single most important factor appears to be the social-educational status of the respondent's parents. The importance of social position and educational level in the USSR has been examined both by American and by Soviet scholars.[11] Many of their findings are consistent with the major studies of social stratification in the United States and other countries.[12] It is not unusual to find that people who share certain characteristics of family background have a tendency to acquire similar levels of education and occupational status. This is particularly true for the Soviet

---

[11]See, for example, Richard Dobson, "Education and Opportunity," in Contemporary Soviet Society, ed. Jerry Pankhurst and Michael Paul Sacks (New York: Praeger Publishers, 1980), pp. 115-137; Murray Yanowitch, Social and Economic Inequality in the Soviet Union (New York: M. E. Sharpe, Inc., 1977), pp. 58-133; O. I. Shkaratan and V. O. Rukavishnikov, "Sotsial'nye sloi v klassovoi strukture sotsialisticheskogo obshchestva," Sotsiologicheskie issledovaniia, No. 2 (1977), pp. 62-73; and L. F. Liss, "The Social Conditioning of Occupational Choice," in Social Stratification and Mobility in the USSR, ed. Murray Yanowitch and Wesley Fisher (New York: International Arts and Sciences Press, Inc., 1973), pp. 275-288.

[12]See, for example, Peter Blau and Otis Dudley Duncan, The American Occupational Structure (New York: John Wiley and Sons, 1967); William Sewell and Robert Hauser, Education, Occupation, and Earnings (New York: Academic Press, 1975); and John Goldthorpe, Social Mobility and Class Structure (Oxford: Clarendon Press, 1980).

Union where access to higher education often depends on family connections and place of residence. Children of the Soviet urban intelligentsia, for example, have a better chance of entering a major university than do children of the rural peasantry, not only because the quality of the pre-university education is better in the larger cities, but also because the Soviet urban intelligentsia is in many ways a self-generating elite. Living in an urban environment is also important in the development of one's employment opportunities and in the formation attitudes toward public policy.

Changes in science and technology affect citizens in all parts of a country, but people living near major industrial centers and in big cities are the ones most likely to feel the direct impact of such changes. It is true that most people experience the effects of technological development without paying much attention to them. But if there is an informed and articulate public regarding issues of science and technology, it is more likely to be found in large urban areas than in small villages (except for the small villages that experience serious industrial accidents). Also, the attention people give to information about science and technology must be viewed within the larger context of the attention they give to other public issues in the mass media as a whole. Since there is greater exposure to information in large urban areas, and since the general educational level of urban residents is higher than that of people in the countryside, one would expect the urban population to be relatively better informed and more attentive

than the rural population on a wider range of public issues of which science and technology are only a part.

It is often noted that people living in an urban environment are less likely to engage in regular religious activities. Family upbringing in the countryside is more traditional in many respects, including a greater emphasis on religious values. Religion tends to be more prevalent, therefore, among the peasantry, the less educated, and those living in rural areas. Religion is not necessarily incompatible with science, but American studies have found that those who are more religious are less likely to be attentive to science and technology. This is most probably a characteristic that accompanies high education and urbanization rather than one that determines attentiveness to organized science, but it is worth exploring nonetheless. Finally, we should look at the impact of age and gender on attentiveness to organized science. In the United States younger people and males are more interested in, and more knowledgeable about, science and technology. The impact of age is a consequence of rising levels of education for the adult population and the inclusion of recent scientific and technical information in school programs. The impact of gender is a result of differentiation in sex roles from early childhood development through adult life. We shall see if the same is true for the Soviet Union.

The following set of hypotheses summarizes the above discussion and the relationships we expect to find:

1. The higher the social-educational status of the respondent's

parents the greater is the probability that the respondent acquired higher levels of education and occupational status.

2. High levels of education and occupational status (both for the respondent and for the respondent's parents) were associated with their living or working in an urban area.

3. The higher the respondent's level of education, the more attention the respondent gave to science and technology.

4. The more closely related the respondent's occupation to the science and technology sector, the more attention the respondent gave to science and technology.

5. The respondents who were male, younger, and less religious were more likely to be attentive to science and technology than were the respondents who were female, older, and more religious.

For the first two hypotheses, we did a series of cross-tabulations of variables for the main sample, where there was a maximum of 2793 respondents. Variables used in the third, fourth, and fifth hypotheses came from questions in the green supplement, where the maximum number of respondents was 922.

Hypothesis 1

The higher the social-educational status of the respondent's father, the greater is the probability that the respondent acquired higher levels of education and occupational status.

The first hypothesis suggests an association between the respondent's family background and his/her access to higher education and to certain types of occupations. For family background we used two variables, the education of the respondent's parents and the main occupational grouping to which the respondent's parents belonged.[13] The education variable

---

[13]The characteristics of both parents are important. We chose the occupation of the respondent's father in reporting the results of our analysis, but the occupation of the respondent's mother would yield similar results.

ranged from some attendance at primary schools to the completion of higher education. The occupation variable included eleven areas of employment, which were grouped first into four levels of social status and then collapsed into two levels, high and low social status, as follows:[14]

High Social Status -- { Leaders; Managers, Military, Other Professionals, and High-Level Engineering Technicians }

Low Social Status -- { Low-Level Engineering Technicians, Service Personnel, and Industrial Workers; Agricultural Labor and Free Enterprise Workers }

Comparable variables were used for the respondent's own education and main occupation both on the first job and on the last job during the respondent's last normal period in the USSR.[15]

The results verified that emigres whose parents had a higher education were much more likely to acquire a higher education themselves. Almost 77.5 percent of the respondents whose fathers had a higher education obtained a higher education themselves, compared with only 27.2 percent of the respondents whose fathers had only a primary education. The comparable figures for respondents whose mothers had a higher education or only a primary education were 81.5 percent and 26.6 percent,

---

[14]The four-level distinction was not as useful statistically, since most of the emigres were in the second and third levels.

[15]The "last normal period" was defined in the SIP as the five-year period usually preceding the emigre's application for an exit visa.

respectively. Children of educated parents were also more likely to enter occupations with higher social status. More than 45 percent of the respondents whose fathers had higher education, and 51 percent whose mothers had higher education, began their careers in professional occupations. By contrast, if the parents had no more than a primary education, then the respondent was more likely to enter the labor force as an industrial worker. The relative impact of the parents' education was less on the respondent's last career position, since there was notable upward mobility for all occupational groups. However, the correlation between the parents' education and the respondent's occupational status remained highly significant.[16]

The father's occupation also had a significant impact on the respondent's level of education and type of occupation. The most educated groups were the respondents whose fathers were high-level engineering-technicians (62.9 percent) or military career officers (61.8 percent), followed by children of professionals (57.1 percent) and of leaders (51.4 percent). Similarly, most of the respondents whose fathers were in high status occupations were in high-status occupations themselves. The SIP data therefore confirmed hypothesis 1, with three exceptions. First, there was less educational achievement than expected for children of managers. Second, a majority of respondents with fathers in low-level engineering technical occupations entered into professional and high-level engineering

---

[16]The chi-squares for all correlations discussed in this paragraph are statistically significant at the 0.00005 level.

technical occupations on their first job. Third, by the time of the last job, a majority of respondents with fathers in service occupations had also moved into high status occupations. Despite these exceptions, the direct correlation between the fathers' social-educational status and that of the respondent was a significant one.[17]

Hypothesis 2

High levels of education and occupational status (both for the respondent and for the respondent's parents) were associated with their living or working in an urban area.

Despite the prevailing urban background of all respondents,[18] the relative proportion of emigres who lived or worked in big cities differed from one educational level or occupational group to another. Among the respondents' parents, a significantly greater proportion of those with a complete higher education lived in big cities compared to those who had less than a primary education (71.4 percent and 32.9 percent, respectively, for the fathers; 69.5 percent and 33.1 percent for the mothers). There was also a direct correlation between the fathers' occupational status and urban residence. For the respondents themselves, there was a significant correlation between education and the size of the cities where they were born and where they lived. The same was true for occupational status. Fifty-five percent of the respondents in high status occupations lived in

---

[17]Chi-squares for the correlations discussed here are statistically significant at the 0.05 or 0.00005 level.

[18]Almost one-half (48.9 percent) of the emigres who were interviewed had been born in big cities (in cities with populations of more than one million people).

big cities, compared with 45 percent of the respondents in low status occupations (on the first job). For the last job, the difference was 56.7 percent and 43.3 percent respectively. Therefore hypothesis 2 is true.[19]

Hypothesis 3

The higher the respondent's level of education, the more attention the respondent gave to science and technology.

The attention people give to science and technology, and to other areas of public policy, can be observed in several ways. One method is to look at the respondents' reading habits. Another is to ask the respondents how closely they follow certain types of public issues. Both methods were used in the Soviet Interview Project. These differ, however, from the measures of attentiveness developed by American scholars for surveys on science and technology. As noted above, the three measures of attentiveness used in surveys of American citizens were: interest in science and technology, knowledge about science and technology, and the acquisition of information on science and technology issues.[20] While there was no attempt to measure

---

[19]Chi-squares for the correlations confirming hypothesis 2 are statistically significant from level 0.05 to 0.00005. The one modification to hypothesis 2 is that low-level engineering technicians were just as likely to be in big cities as were the people in high status occupations, but this did not make a significant difference in our findings.

[20]Jon Miller and others observed "interest" by asking respondents which of 32 headlines they might read about. They observed "knowledge" by asking respondents to answer substantive questions about science and technology. And, they observed "acquisition of information" by asking respondents about their reading habits, including the reading of science magazines. Miller, Suchner, and Voelker, pp. 73-118; Miller, Prewitt, and Pearson, pp. 17-45.

scientific or technical knowledge among Soviet emigres, there are two variables in the Soviet Interview Project that can serve as partial indicators of interest and information acquisition, respectively, namely the reading of science fiction and the reading of scientific-technical nonfiction. We shall examine both aspects of the emigres' reading habits as partial objective measures of attentiveness to science and technology. Then we shall discuss the subjective measure of attentiveness obtained from the respondents' own statements on how closely they followed Soviet scientific achievements.

Soviet emigres were asked to identify the kinds of nonfiction books they had read during their last normal period in the USSR. Almost 30 percent said they had read books on science and technology.[21] This was the largest category of nonfiction responses except for books on foreign culture (read by 36.4 percent). The interest in foreign culture may have been greater than usual because the respondents were people who were expecting to emigrate soon. There was less of a compelling reason for them to be reading scientific and technical nonfiction before their departure. That makes the relatively high percentage in this category even more remarkable.[22] Respondents were also asked what

---

[21]The number of people reading scientific-technical nonfiction may have been higher if technical journals, newspapers, and documents had been included in the response options.

[22]In the United States only 13 percent of the population read science news magazines in 1979 (Miller, Prewitt, Pearson, p.40), but these statistics are not directly comparable. Emigres in the SIP study were more highly educated than the average Soviet citizen.

kinds of fiction they had read during their last normal period in the USSR. Almost 28 percent said they had read science fiction. This was is than the percentage who had read classical literature, detective stories, and other types of fiction, but it is still a significant amount. General interest in science fiction is widespread in the Soviet Union, particularly since it is a genre that allows for imaginative fantasies as well as for critical social commentary. If we use scientific literature as an indication of attentiveness (that is, science fiction and/or scientific-technical nonfiction), then 45.3 percent of the emigres who answered the green supplement were part of the attentive public for science and technology in the USSR. (See Table 1.)

TABLE 1

RESPONDENT'S READING OF SCIENTIFIC LITERATURE

Reading Scientific Literature	Percentage
Neither scifi nor scitech nonfiction	54.7
Only science fiction	15.2
Only scitech nonfiction	17.3
Both scifi & scitech nonfiction	12.8
TOTAL	100.0

In testing Hypothesis 3 we expected to find that the more highly educated respondents would be more likely to read each type of scientific literature. Essentially this was correct.

But the different levels of interest in science fiction and scientific-technical nonfiction meant that each had to be tested separately as well as together. When we separated the ones who read only science fiction and not scientific-technical nonfiction (and vice-versa), we saw that the reading of science fiction was distributed more evenly among emigres with different levels of education. (See Table 2. Compare, for example, the 19.2 percent of emigres with 7-8 years of general education to the 19.7 percent of emigres with some higher education who had read science fiction.) The direct correlation between scientific-technical nonfiction and education remained consistent, however, with the exception of one person. Not only the level of education, but also the specialty studied in school was highly significant in influencing one's reading preferences. Respondents who had studied medicine or the natural sciences, for example, were the ones most likely to read scientific-technical nonfiction, while engineering graduates were the ones most likely to read science fiction.[23]

If the more educated members of the emigre population were the ones who read scientific literature, were they also the ones who said they followed Soviet scientific achievements most closely? Are these the relatively few people whom we could identify as the "attentive public" for science and technology?

---

[23]The chi-squares are statistically significant at the 0.00015 level for the correlation between education and science fiction, at the 0.00005 level for the correlations between education/education specialty and scientific-technical nonfiction, and at the 0.0213 level between education specialty and science fiction.

TABLE 2

RESPONDENT'S EDUCATION AND READING SCIENTIFIC LITERATURE (a)

Education	Reading Scientific Literature				ROW TOTAL
	Neither Scifi/ST	Only Scific	Only SciTech	Both Scifi&ST	
Less than 4 yrs. qen'l. educ.	9 100.0 1.8				9 1.0
From 4-6 yrs. qen'l. educ.	35 92.1 7.0	2 5.3 1.4	1 2.6 .6		38 4.2
Either 7-8 yrs. qen'l. educ. or 1 yr. trade sch.	39 75.0 7.8	10 19.2 7.2	3 5.8 1.9		52 5.7
More than 8 yrs. qen'l. educ. or 1 yr. spec. sec.	15 78.9 3.0	2 10.5 1.4	1 5.3 .6	1 5.3 .9	19 2.1
Either 2 yr. trade sch. w. diplom or 3 yrs. wo. diplom	3 60.0 .6	1 20.0 .7		1 20.0 .9	5 .6
Sec. sch. diplom w/ wo. 2 yrs. trade/ 1 yr. spec. sec.	112 68.3 22.5	31 18.9 22.5	11 6.7 7.0	10 6.1 8.6	164 18.1
Complete special'd. secondary sch.	129 60.0 26.0	29 13.5 21.0	32 14.9 20.4	25 11.6 21.6	215 23.7
Higher education without degree	31 43.7 6.2	14 19.7 10.1	15 21.1 9.6	11 15.5 9.5	71 7.8
Complete higher ed. or grad. study	124 37.0 24.9	49 14.6 35.5	94 28.1 59.9	68 20.3 58.6	335 36.9
COLUMN TOTAL	497 54.7	138 15.2	157 17.3	116 12.8	908 100.0

CHI-SQUARE=136.12359 SIGNIFICANCE < 0.00005

(a) Given the distribution of the sample along the marginals (see row and column totals), the reader

should look at the relative proportion of each row total that falls in each column. For example, compare the 37.0 percent of the people with a complete higher education (code 8) who read neither and 20.3 percent who read both to the 78.9 percent of the people with one year of secondary school (code 3) who read neither and 5.3 percent who read both. (This applies to other tables as well.)

Based on the subjective indicator of attentiveness, 32.8 percent of the emigres who answered the green supplement were part of the attentive public, while approximately two-thirds of them were nonattentive.[24] When asked how closely they had followed Soviet scientific achievements and programs, those who had completed higher education were more likely to answer "very closely" or "fairly closely," while those with less than four years of school were more likely to answer "not at all." (See Table 3.) Hypothesis 3 is true. Yet a majority (53.4 percent) of those who had completed higher education said either that they did not follow science too closely or that they did not follow science at all. In a very rough comparison to the attentiveness of the American public, Soviet emigres appeared to be more attentive to science and technology at all educational levels except the highest. But without similar measures of attentiveness, an exact

---

[24]For the full frequency distribution, see the column totals in Table 3.

TABLE 3

RESPONDENT'S EDUCATION AND FOLLOWING SCIENTIFIC ACHIEVEMENTS

Education	Following Scientific Achievements				ROW TOTAL
	Very Closely	Fairly Closely	Not Too Closely	Not At All	
Less than 4 yrs. qen'l. educ.			1 12.5 .2	7 87.5 3.3	8 .9
From 4-6 yrs. qen'l. educ.	1 2.6 1.5	3 7.7 1.3	11 28.2 2.7	24 61.5 11.3	39 4.3
Either 7-8 yrs. qen'l. educ. or 1 yr. trade sch.	5 10.0 7.5	4 8.0 1.7	16 32.0 4.0	25 50.0 11.8	50 5.5
More than 8 yrs. qen'l. educ. or 1 yr. spec. sec.	1 5.3 1.5	4 21.1 1.7	5 26.3 1.2	9 47.4 4.2	19 2.1
Either 2 yr. trade sch. w. diplom or 3 yrs. wo. diplom	1 16.7 1.5	1 16.7 .4	1 16.7 .2	3 50.0 1.4	6 .7
Sec. sch. diplom w/ wo. 2 yrs. trade/ 1 yr. spec. sec.	12 7.3 17.9	31 18.8 13.3	67 40.6 16.7	55 33.3 25.9	165 18.1
Complete special'd. secondary sch.	7 3.3 10.4	47 21.9 20.2	118 54.9 29.4	43 20.0 20.3	215 23.5
Higher education without degree	5 6.9 7.5	20 27.8 8.6	36 50.0 9.0	11 15.3 5.2	72 7.9
Complete higher ed. or grad. study	35 10.3 52.2	123 36.3 52.8	146 43.1 36.4	35 10.3 16.5	339 37.1
COLUMN TOTAL	67 7.3	233 25.5	401 43.9	212 23.2	913 100.0

CHI-SQUARE=155.30746 SIGNIFICANCE < 0.05

comparison cannot be made.[25] Again, one's educational specialty was a significant factor. Those who had studied the natural sciences claimed to have been more attentive to Soviet scientific achievements than did those who had studied other subjects.[26]

Hypothesis 4

> The more closely related the respondent's occupation to the science and technology sector, the more attention the respondent gave to science and technology.

We expected to find that the people who worked in scientific-technical occupations (that is, those who worked in the science sector of the economy and those who had professional or engineering-technical occupations) would be the ones most likely to follow scientific events closely. The difficulty in testing this hypothesis is that most branches of the economy, broadly defined, are related in one way or another to changes in science and technology. Also, the initial occupational

---

[25]Among those who had less than a secondary school education in the USSR or less than a high school education in the USA, 16.4 percent or 4.0 percent, respectively, were attentive to organized science. Among those who completed Soviet secondary school or American high school, the difference was 25.5 percent to 12.0 percent, respectively. Among those with some higher education in the USSR or some college in the USA, the difference was 34.7 percent to 28.0 percent, respectively. But among those who completed higher education or had advanced graduate training in each country, the proportion of attentives was 46.6 percent for the Soviet Union and 47.9 percent for the United States. American figures adapted from Miller, Prewitt, and Pearson, p. 46.

[26]The distribution of responses for respondents who had studied the natural sciences was: Very closely, 32.3 percent; fairly closely, 32.3 percent; not too closely, 22.6 percent; not at all, 12.9 percent. N=31, chi-square is statistically significant at the 0.00005 level.

categories were defined so broadly that scientists were coded in the same professional group as artists and government planners. To get a finer distinction between the responses of those who worked in science-related ocupations and those who did not, we identified a group of scientists who met at least one of two criteria: (1) employment in establishments conducting scientific research work, and (2) employment as scientific workers (teachers and administrators) in institutions of higher education (vysshie uchebnye zavedeniia or vuzy). The number of emigres who met one of these criteria was 299, or 10.7 percent of the total SIP population.

The characteristics of our sample of Soviet emigre scientists resembled those of the attentive public in several ways. Most of them came from families where the fathers were highly educated and in professional occupations. Their parents were usually not religious, and neither were they. Scientists were significantly more urban than nonscientists. A majority of the scientists were male,[27] and most of them (72.9 percent) were between the ages of 33 and 52. When we compared the reading habits of scientists with nonscientists, we found, not surprisingly, that the former were significantly more likely than the latter to read scientific-technical nonfiction. They were less likely, however, to read science fiction. (See Table 4.) Turning to the question of how closely the respondents claimed to follow Soviet scientific achievements, we found that scientists

---

[27]While men accounted for only 43.4 percent of the emigre population, they represented 50.8 percent of the scientists.

TABLE 4

SCIENTISTS AND READING SCIENTIFIC LITERATURE

Occupation	Reading Scientific Literature				ROW TOTAL
	Neither Scifi/ST	Only Scific	Only SciTech	Both Scifi&ST	
Scientists	28 28.6 5.6	14 14.3 10.1	33 33.7 21.0	23 23.5 19.8	98 10.8
Nonscientists	469 57.9 94.4	124 15.3 89.9	124 15.3 79.0	93 11.5 80.2	810 89.2
COLUMN TOTAL	497 54.7	138 15.2	157 17.3	116 12.8	908 100.0

CHI-SQUARE=40.68636 SIGNIFICANCE < 0.00005

TABLE 5

SCIENTISTS AND FOLLOWING SCIENTIFIC ACHIEVEMENTS

Occupation	Following Scientific Achievements				ROW TOTAL
	Very Closely	Fairly Closely	Not Too Closely	Not At All	
Scientists	20 20.0 29.9	37 37.0 15.9	30 30.0 7.5	13 13.0 6.1	100 11.0
Nonscientists	47 5.8 70.1	196 24.1 84.1	371 45.6 92.5	199 24.5 93.9	813 89.0
COLUMN TOTAL	67 7.3	233 25.5	401 43.9	212 23.2	913 100.0

CHI-SQUARE=40.33880 SIGNIFICANCE < 0.00005

(especially those who were employed as scientific workers in vuzy) were significantly more attentive than were nonscientists. (See Table 5.) Hypothesis 4 is true. Still, it is noteworthy that 43 percent of the scientists said that they did not follow scientific achievements too closely or did not follow them at all. The relatively low interest expressed by Soviet emigre scientists may indicate their disaffection with Soviet scientific and technical capabilities, as we shall see below.

Even though the data from the Soviet Interview Project confirmed hypotheses 3 and 4, it is worth asking why so many respondents gave relatively little attention to Soviet scientific achievements. Do the negative responses to this question mean that there was a low interest in science, per se, or a low interest in Soviet achievements and programs? Were Soviet scientific achievements seen as indications of scientific progress in general or as measures of Soviet prestige and power in particular? The real import of this question can be understood only in comparison with questions on how closely the respondents followed other types of Soviet achievements and programs, but comparable questions were not included in the SIP survey. As an alternative check on the validity of the subjective measure of attentiveness to organized science, we correlated emigre responses to this question with their reading of scientific literature, where the questions were more straightforward. More than 52 percent of those who followed Soviet scientific achievements very closely read science fiction and almost 54 percent read scientific-technical nonfiction. By

contrast, only 20 percent of those who did not follow Soviet scientific achievements at all read science fiction and only 11 percent read scientific-technical nonfiction.[28] Moreover, the two variables (reading scientific literature and being attentive to scientific achievements) behaved the same way in relation to other variables. This reinforced our confidence in using the subjective mesure of attentiveness to report the results for hypotheses six through eleven in the next section.

Hypothesis 5

The respondents who were male, younger, and less religious were more likely to be attentive to science and technology than were the respondents who were female, older, and more religious.

Studies of the American public have shown that men are more attentive than women to science, technology, and other areas of public policy. One might argue that this is the result of the differentiation of sex roles in traditional childhood development and the low proportion of women in scientific and technical occupations. Our examination of the SIP data showed that Soviet women were less likely than men to complete higher education and to work in engineering/technical occupations. To test the impact of gender and age on attentiveness to science and technology, we used the former as control variables in other hypotheses and we also correlated them directly with each of the variables discussed above. We found that women and older emigres (especially those over 53 years old) were less likely than men

---

[28]In the correlation between reading scientific literature and following scientific achievements, the chi-square is statistically significant at the 0.00005 level.

and younger emigres to read science fiction or scientific-technical nonfiction and to follow Soviet scientific achievements closely, partly confirming hypothesis 5.[29] The gender variable had no significant impact on the direct correlations between the education and occupation variables and the variables of attentiveness to organized science. Those correlations did not remain consistent for all age groups, however. Relationships between the education and occupation variables, on the one hand, and attentiveness to science and technology, on the other, were significant only for the middle and older aged groups (especially 43-57 and 63-72 years old). This suggested that age may be more important than gender as a factor affecting the respondents' attentiveness to organized science.

The research conducted by Prewitt and his colleagues demonstrated that Americans with strong religious backgrounds were less likely to be attentive to organized science. This does not mean that science and religion are incompatible. It does suggest, however, that religiosity may be associated with some of the other variables that result in low attention to science and technology. Indeed, among emigres in the Soviet Interview Project, there was a greater probability that the respondents would be religious if they were older, less educated, in low status occupations, and living in rural areas. The religiosity and social-educational status of one's parents were also very

---

[29]For the correlations of gender and age with reading scientific literature and following scientific achievements the chi-squares are statistically significant from level 0.0024 to level 0.0005.

significant for the development of the emigres' religious beliefs. Students of the natural sciences and respondents who worked in the science sector (especially engineering technicians) were among the least religious. Proportionately more women believed in god, and more men believed in science. But the nonreligious (even scientists) were more apt to say they believed in humanity rather than in science, as an alternative to a belief in god.[30] As in the United States, religious people were less attentive to science and technology than were the nonreligious, confirming the rest of hypothesis 5. (See Table 6.) When controlled for other variables, however, religion appeared

TABLE 6

RESPONDENT'S RELIGIOSITY AND FOLLOWING SCIENTIFIC ACHIEVEMENTS

Religiosity	Following Scientific Achievements		ROW TOTAL
	Very Closely or Fairly Closely	Not Too Closely or Not At All	
Religious	69 27.2 23.1	184 72.7 30.3	253 27.9
Not religious	230 35.2 76.9	423 64.8 69.7	653 72.1
COLUMN TOTAL	299 33.0	607 67.0	906 100.0

CHI-SQUARE=17.41021 SIGNIFICANCE = 0.0003

[30]Thirty percent of the scientists said they believed in a suprahuman power, 30.7 percent said they believed in humanity, 13.1 percent said they believed in science, and 9 percent said they believed in god.

to be less significant than gender in affecting the respondent's attentiveness to organized science.

In our analysis of the SIP data, so far, we have identified the members of the emigre public who were attentive to science and technology. We found that education was a significant factor in developing the respondents' reading habits and attentiveness to organized science. The more highly educated emigres, particularly those who specialized in the natural sciences and in medicine, were the ones most likely to read scientific literature and to follow Soviet scientific achievements closely. Emigres in science-related occupations also were more attentive to science and technology than were the emigres in other occupations. Yet, scientists were not as attentive as one might expect. We confirmed that the emigres who were most likely to obtain higher education and to work in the science sector, and thereby most likely to become the attentive public, were the ones who had parents with high social-educational status. They lived in urban environments where there was greater exposure to the mass media and to scientific-technical information. Finally, the attentive public was most likely to be male, younger, and less religious than the non-attentives.

The above discussion demonstrates that the variables which were salient for the development of attentiveness among the American public were important also for Soviet emigres. Accordingly, education, family background, occupation, media exposure, gender, and religiosity all play a role in the

formation of an attentive public for Soviet science and technology.[31] Moreover, the relationship of each variable with attentiveness was similar in the American studies and the Soviet Interview Project. The more attentive were those who had higher education, those who worked in professsional and technical occupations, those who came from high-status families, and those who were male, younger, and less religious. Although not reported here as a separate hypothesis, there were also similar patterns of general media consumption for the American and emigre attentive public. Additional comparisons between Soviet emigres and Americans are limited due to the differences in sample selection, in the questions asked, and in the modes of analysis. In the studies by Miller, Prewitt, and others, for example, the authors used multivariate analysis to determine the relative impact of each variable on attentiveness to organized science. The results of our cross-tabulations of the SIP data suggest that occupation may be second in importance to education in predicting attentiveness to science and technology, but we cannot know for sure until we process the data further. Having identified the characteristics of the emigre population that was most attentive to science and technology, let us now examine the attentive public's attitudes toward science, scientists, and science policy.

---

[31]One variable from the American studies that we did not include in our analysis was the respondents' political activity, which accounted for 6 percent of the variance in attentiveness to organized science in the United States. Miller, Prewitt, and Pearson, p. 51.

Soviet Emigre Attitudes Toward Science and Technology

American scholarship on public attitudes toward science and technology suggests that the people who are more informed about, and more interested in, science are generally the ones who give strong support to scientific programs and to the traditional values of scientific research. This is the case also for those who work close to the science sector of the economy. Scientists tend to be more sympathetic toward the funding of projects that contribute directly to their own work and to the protection of values such as the freedom of scientific inquiry. An informed assessment of science and technology often extends to a broad appreciation of the impact of science and technology on society as a whole. One might expect that scientists and the attentive public would be highly confident in the ability of science and technology to solve social problems. At the same time, however, we could argue that the closer one is to the scientific enterprise, the more one sees its shortcomings, its problems, and its pockets of corruption. The lofty image that scientists and scientific institutions project to the general public may seem tarnished to those who have direct experience with them.

In this section we test six hypotheses regarding the attitudes of Soviet emigres toward science and technology, with attentiveness to organized science as the key independent variable. The maximum sample size for each hypothesis (based on data from the green supplement) is 913. The six hypotheses are:

6. The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to support Soviet funding for exploration in outer space.

7. The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to believe that scientific leaders were honest.

8. The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to believe that scientific leaders were competent.

9. The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to support the relative importance of fundamental over applied research.

10. The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to value the freedom of scientific inquiry.

11. The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to believe that science and technology could solve problems in the areas of agriculture, health, consumer goods, energy, pollution, and crime.

Hypothesis 6

The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to support Soviet funding for exploration in outer space.

In 1957 the world acknowledged the launching of Sputnik as a major accomplishment for Soviet science and technology. By 1965 Soviet investment in science had increased dramatically and the commitment to the space program continued into the 1970s, albeit at a slower pace. Estimated expenditures for space exploration were approximately 1 to 2 percent of Soviet GNP from 1967 to 1980.[32] Using support for the space program in the 1970s as an indication of support for Soviet science and technology,

---

[32]From 1955 to 1965 the Soviet science budget grew more than fivefold. For an estimate of space expenditures, see U. S., Congress, Senate, Soviet Space Programs: 1976-80, Part 1, 97th Cong., 2d sess., 1982, pp. 334-335, and earlier reports for 1966-70 and 1971-75.

SIP interviewers asked the emigres whether they thought the Soviet Union was spending too much, too little, or about the right amount of money on space exploration, along with several other areas of public policy.[33]

General public support for space exploration was very low compared with support for other program areas. More than 67 percent of the respondents thought that the government was spending too much money on space. The only two areas where a greater percentage of respondents thought that the Soviet Union was spending too much money were defense (79.3 percent) and aid to Eastern Europe (72.9 percent). Indeed, the emigres may have seen the space program as part of Soviet military research and foreign policy. The preference for a reduction of expenditures in the space program was evident among all respondents regardless of how closely they followed Soviet scientific achievements. The attentive public supported funding for space slightly more than the nonattentive public did, but not by a statistically significant amount. Therefore hypothesis 6 is false. (See Table 7.) There was considerable consensus on this issue also between scientists and nonscientists.

Hypothesis 7

The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to believe that scientific leaders were honest.

Was the low public support for space exploration

---

[33]The other areas were health, defense, agriculture, foreign aid (to Eastern Europe), crime, and education.

indicative of public distrust of scientists and scientific instututions? Is it possible that respondents saw the space program as an area where resources were wasted because of corruption and incompetence among Soviet space scientists and technicians? Or, was space exploration, along with defense and aid to Eastern Europe, viewed as programs directed toward external targets, at the expense of domestic-related programs such as health and agriculture where respondents thought that the

TABLE 7

ATTENTIVENESS AND SUPPORT FOR THE SPACE PROGRAM

Following Scientific Achievements	Amount Spent on Space Program: Right Amount	Too Little	Too Much	ROW TOTAL
Very closely	13	3	47	63
	20.6	4.8	74.6	7.7
	7.6	21.4	7.5	
Fairly closely	47	5	169	221
	21.3	2.3	76.5	27.2
	27.3	35.7	27.0	
Not too closely	84	5	279	368
	22.8	1.4	75.8	45.3
	48.8	35.7	44.5	
Not at all	28	1	132	161
	17.4	.6	82.0	19.8
	16.3	7.1	21.1	
COLUMN TOTAL	172	14	627	813
	21.2	1.7	77.1	100.0

CHI-SQUARE=7.38364 SIGNIFICANCE = 0.2868

Soviet government should spend more? Perhaps the emigres would have responded more positively in support of domestic science programs with more immediate practical payoffs, such as biomedical research. The latter interpretation is supported by the emigres' confidence that science and technology could solve health problems (see hypothesis 11).

To test whether the public viewed science and scientific institutions as basically honest or dishonest, emigres were asked about the leaders of the USSR Academy of Sciences. For comparative purposes the emigres were asked about other institutions as well. Public perception of the Academy was very favorable. The USSR Academy of Sciences remains a highly prestigious institution, and this was clearly reflected in the emigres' assessment. In fact, the percentage of the emigre population who said that "none" or "hardly any" Academy leaders were honest was lower than for the leaders of any other institution. Almost 26 percent of all respondents said that "most" or "almost all" Academy leaders were honest, 33.4 percent said that "some" were honest, and 13.6 percent said that "none" or "hardly any" were honest. The only institution which a higher percentage of respondents (27.3 percent) considered to be "mostly" or "almost all" honest was the military. Emigre perceptions of honesty in the Academy leadership were expressed more frequently by the attentive public than by the non-attentives, thus substantiating hypothesis 7. (See Table 8.)[34]

---

[34]Those who paid the least attention to science and technology were the ones most likely to hold the extreme views

Not unexpectedly, scientists were more likely than nonscientists to view the Academy leaders as honest. But they did not have the same confidence in the Academy's competency, as we shall see below.

TABLE 8

ATTENTIVENESS AND THE HONESTY OF SCIENTIFIC LEADERS

Following Scientific Achievements	How Many Scientific Leaders Are Honest					ROW TOTAL
	None	Hardly Any	Some	Most	Almost All	
Very closely	5 9.8 7.9	5 9.8 8.9	28 54.9 8.3	9 17.6 5.9	4 7.8 6.1	51 7.6
Fairly closely	9 4.8 14.3	17 9.0 30.4	99 52.4 29.5	49 25.9 32.2	15 7.9 22.7	189 28.1
Not too closely	31 9.9 49.2	27 8.6 48.2	162 51.6 48.2	72 22.9 47.4	22 7.0 33.3	314 46.7
Not at all	18 15.1 28.6	7 5.9 12.5	47 39.5 14.0	22 18.5 14.5	25 21.0 37.9	119 17.7
COLUMN TOTAL	63 9.4	56 8.3	336 49.9	152 22.6	66 9.8	673 100.0

CHI-SQUARE=33.95751 SIGNIFICANCE = 0.0007

Hypothesis 8

The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to believe that scientific leaders were competent.

---

that "none" (15.1 percent) or "all" (21.0 percent) of the Academy leaders were honest, whereas a majority of the other respondents selected the middle option and said that "some" were honest.

Emigres were asked about the competency of Academy leaders in comparison with leaders of other institutions. Again, the public's view of the Academy was a very positive one. The proportion of respondents who said that Academy leaders were incompetent (2.4 percent) was smaller than for any other institution. The military and the Academy were chosen as "most" or "almost all" competent by the largest proportion of respondents, that is, by 50.2 percent and by 49.2 percent respectively. Generally, the public viewed all institutions as more competent than honest. Public perception of Academy competence did not seem to vary with one's attentiveness to scientific achievements, however, and hypothesis 8 was found to be false. Between 40.0 and 48.1 percent of the respondents said that "most" Academy leaders were competent. The rest were fairly evenly divided between the views that "some" or "almost all" Academy leaders were competent. (See Table 9.)[35] While in general agreement with the rest of the respondents, scientists tended to be more skeptical about this. Only 15.1 percent of the scientists thought that "almost all" Academy leaders were competent, compared with 23.4 percent of the nonscientists who thought so.

Hypothesis 9

The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to support the relative importance of fundamental over applied research.

---

[35]Again, the least attentive were the ones most likely to select the extreme options of "none" or "all."

Respondents were asked if during their last normal period in the USSR they thought it was more important for scientists to create new ideas and theories or to solve practical problems. The people who were most attentive to organized science said that fundamental research was more important. Almost 37 percent of them preferred the creation of new ideas, compared with 30 percent who preferred the solution of practical problems. All other respondents said that applied research was more important, by an increasingly greater margin for the less attentive. Among those who followed scientific achievements fairly closely, there

TABLE 9

ATTENTIVENESS AND THE COMPETENCY OF SCIENTIFIC LEADERS

Following Scientific Achievements	How Many Scientific Leaders Are Competent					ROW TOTAL
	None	Hardly Any	Some	Most	Almost All	
Very closely			16 30.8 8.0	25 48.1 8.0	11 21.2 7.5	52 7.7
Fairly closely	2 1.0 18.2	1 .5 16.7	59 30.6 29.4	90 46.6 28.9	41 21.2 27.9	193 28.6
Not too closely	5 1.6 45.5	4 1.3 66.7	91 29.3 45.3	148 47.6 47.6	63 20.3 42.9	311 46.0
Not at all	4 3.3 36.4	1 .8 16.7	35 29.2 17.4	48 40.0 15.4	32 26.7 21.8	120 17.8
COLUMN TOTAL	11 1.6	6 .9	201 29.7	311 46.0	147 21.7	676 100.0

CHI-SQUARE=7.68627 SIGNIFICANCE = 0.8091

was a 0.5 percent difference in the proportion who preferred applied over basic research (36.5 percent and 36.0 percent respectively). Among those who did not follow scientific achievements too closely, there was a 3.0 percent difference (40.7 percent and 37.7 percent); and for those who did not follow scientific achievements at all, there was a 16.9 percent difference (51.5 percent and 34.6 percent). (See Table 10.) Hypothesis 9 is true. In a separate cross-tabulation we found that scientists were the ones most likely to support both kinds

TABLE 10

ATTENTIVENESS AND SUPPORT FOR FUNDAMENTAL RESEARCH

Following Scientific Achievements	What Scientists Should Do: Create Ideas	Solve Problems	Both	ROW TOTAL
Very closely	24	20	21	65
	36.9	30.8	32.3	8.4
	8.4	6.3	11.8	
Fairly closely	80	81	61	222
	36.0	36.5	27.5	28.5
	28.1	25.7	34.3	
Not too closely	136	147	78	361
	37.7	40.7	21.6	46.4
	47.7	46.7	43.8	
Not at all	45	67	18	130
	34.6	51.5	13.8	16.7
	15.8	21.3	10.1	
COLUMN TOTAL	285	315	178	778
	36.6	40.5	22.9	100.0

CHI-SQUARE=16.06310 SIGNIFICANCE = 0.0134

of activities (36.1 percent of scientists, compared with 26.4 percent of the attentive public, and 18.2 percent of the nonattentive public). A similar decline in the relative support for both basic and applied research can be seen in Table 10 (from 32.3 percent for the most attentive to 13.8 percent for the nonattentive).

Hypothesis 10

The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to value the freedom of scientific inquiry.

To see whether the emigres supported freedom of scientific inquiry, they were asked to comment on the placement of

TABLE 11

ATTENTIVENESS AND THE FREEDOM OF SCIENTIFIC RESEARCH

Following Scientific Achievements	Should Research Be Free or Restricted: Free	Restrict	ROW TOTAL
Very closely	47	18	65
	72.3	27.7	8.1
	8.4	7.5	
Fairly closely	150	67	217
	69.1	30.9	27.1
	26.7	28.0	
Not too closely	266	100	366
	72.7	27.3	45.8
	47.4	41.8	
Not at all	98	54	152
	64.5	35.5	19.0
	17.5	22.6	
COLUMN TOTAL	561	239	800
	70.1	29.9	100.0

CHI-SQUARE=3.70703 SIGNIFICANCE = 0.2949

restrictions on scientific research. Should scientists be permitted to study whatever they want (even if they sometimes discover things that might be harmful), or should there be restrictions on their research? Support for the principle of scientific freedom was widespread regardless of whether the respondent was generally attentive or nonattentive to science. (See Table 11.) Therefore, hypothesis 10 is false. Support for the freedom of scientific research was even higher among emigre scientists (75.0 percent of them were opposed to any restrictions on science, compared with 69.5 percent of the nonscientists who opposed restrictions), but this was not statistically significant.

Hypothesis 11

> The more closely the respondent followed Soviet scientific achievements, the more likely the respondent was to believe that science and technology could solve problems in the areas of agriculture, health, consumer goods, energy, pollution, and crime.

More than 40 percent of the emigres said that the solution of practical problems was more important than theory-building. But did they have faith in science and technology to solve problems in areas of social and economic policy? To test hypothesis 11 the emigres were asked whether they believed (during their last normal period in the USSR) that Soviet science and technology could eventually solve most of the problems, some of the problems, or none of the problems in several policy areas. The results differed, of course, depending on the area of public policy. The interpretation of these differences is somewhat ambiguous. In some cases, differences may reflect the emigres' perceptions of the relative distances between science and

technology, on the one hand, and the substantive policy areas, on the other. Or, the differences may reflect the emigres' perceptions of how amenable each problem was to any kind of a solution. In other cases, emigres may have been expressing their confidence in the Soviet system, that is, in the ability of the Soviet political leadership to use science and technology in the solution of certain social problems. Therefore, we do not know whether the respondent was focusing on the research potential of science and technology or on the Soviet system in general. With this in mind, let us review the results.

The people who followed Soviet scientific achievements closely were no more likely than the nonattentives to believe that science and technology could solve the problems in agriculture, health, energy, or crime. There was a statistically significant difference in the correlations for pollution and consumer goods,[36] but the distribution of responses did not clearly correspond to what was stated in the hypothesis. For most policy areas, therefore, hypothesis 11 appeared to be false. For a better delineation of responses, we created a new variable that separated emigre scientists from other emigres in their responses to the question on attention to Soviet scientific achievements. Since people who worked in the science sector of the economy or in science occupations were among the most attentive members of the emigre population, we put them in the

---

[36]Chi-squares for the correlations between attentiveness and pollution/consumer goods are statistically significant at the 0.0018 level and 0.0745 level, respectively.

top category of attentiveness and combined the four response categories to two for the nonscientists as follows:

Scientist/Attentive Public Variable	N
1. Scientists (emigres who worked in the science sector or in science occupations)	100
2. Attentive Public (nonscientists who followed scientific achievements very closely or fairly closely)	243
3. Nonattentive Public (nonscientists who followed scientific achievements not too closely or not at all)	570
Total number of respondents who answered the question on attentiveness to science	913

We then correlated this variable with emigre opinions on the ability of science and technology to solve social and economic problems.

The policy areas where emigres expressed the most confidence were health, energy, and pollution. In each case, a majority said that science and technology could solve at least "some" of the problems. The most positive reponses were in the area of energy, where 32.8 percent said that science and technology could solve "most" of the problems. At the other extreme, a majority of emigres said that science and technology could solve "none" of the problems in agriculture and consumer goods (53.1 and 53.9 percent respectively). (See Table 12.) It is significant that scientists were consistently more negative than nonscientists about the ability of science and technology to solve social and economic problems. In all six areas of public policy, scientists were the most likely to say that "none" of the problems could be solved by science and technology. By contrast,

the attentive nonscientists were the most optimistic. One possible explanation is that the attentive nonscientists were people who supported organized science, but they did not know as much about the country's scientific and technical capabilities as the scientists did. (See Table 13.)

TABLE 12

PUBLIC CONFIDENCE IN SCIENCE AND TECHNOLOGY

Area of Public Policy	Science and Technology Can Solve Most/Some/None of the Problems(a)			
	Most	Some	None	N
Agriculture	9.1	37.9	53.1	795
Health	18.5	67.2	14.4	807
Consumer goods	8.4	37.6	53.9	805
Energy	32.8	60.6	6.7	720
Pollution	17.5	52.7	29.8	766
Crime	14.0	48.6	37.4	771

(a) Percentage of all respondents (N) who answered in each policy area. Each row totals 100 percent.

TABLE 13

INABILITY OF SCIENCE AND TECHNOLOGY TO SOLVE PROBLEMS (a)

Area of Public Policy	Scientists	Nonscientists		Level of Significance (b)
		Attentive	Nonattentive	
Agriculture	64.9	49.8	52.2	0.0637
Health	17.7	10.8	15.4	0.0044
Consumer goods	70.8	50.4	52.2	0.0028
Energy	8.8	5.1	7.0	0.2494
Pollution	40.6	27.3	28.7	0.0640
Crime	46.7	37.7	35.4	0.0922

(a) Percentage of each group who said that science and technology could solve "none" of the problems in that policy area.
(b) The levels at which the chi-squares are statistically significant in cross-tabulations of responses from scientists and nonscientists.

Conclusion

Despite the limitations in the SIP data base, we still can draw some general conclusions about the attentive public for Soviet science and technology. The interest in organized science was fairly high, whether measured by the emigres' reading habits or by their attention to Soviet scientific achievements. Approximately 33 to 45 percent of the emigres could be considered

members of the attentive public.[37] Many of them read science fiction and acquired information on organized science by reading scientific-technical nonfiction. Those who were attentive to science and technology had a more positive image of the honesty of scientific leaders, and they were more likely to support the relative importance of fundamental research. The concept of attentiveness was significant in drawing these distinctions, but it was not very helpful in differentiating emigre attitudes in areas where there was a high degree of consensus.

On the whole, Soviet emigres had a positive view of science and scientific leaders. There was widespread support for the freedom of scientific inquiry and a prevailing consensus that scientists were competent in their work. Emigre confidence in the enterprise of science and in the professional behavior of scientists apparently did not extend to the Soviet system in general. The different assessments of organized science in contributing to each area of social and economic policy reflected a discriminating, but somewhat negative view of the system's ability to utilize its scientific and technical capabilities effectively. Where there was confidence that Soviet organized science could solve some of the problems, for example in the area of health, there was criticism that the Soviet government was not

---

[37]Only 18 percent of the American public was attentive to organized science in 1979, but the U.S. and SIP statistics are not directly comparable. The range in the size of the attentive public in the United States was from 4 percent of the population to 55 percent depending on the level of education (Miller, Prewitt, and Pearson, p. v). Almost 45 percent of the emigres in the Soviet Interview Project were highly educated, which may account for the large size of the attentive public in this study.

investing enough resources to do so. In other areas, such as agriculture, the emigres were pessimistic about scientific and technical capabilities, possibly also because of inadequate resource allocation.[30] This would be all the more frustrating for those who considered the main task of science to be the solution of practical problems. The pragmatic orientation toward science and technology, especially among nonscientists, might account for the low priority of the space program. Emigres may have seen the exploration of outer space as frivolous or as a military venture not directly relevant to the daily needs of the average citizen.

Perhaps the most revealing aspect of our study is the negative attitude of Soviet emigre scientists toward Soviet scientific and technical capabilities. It is true that they were significantly more attentive to organized science than nonscientists were. Fifty-seven percent of the scientists followed scientific achievements and 71.5 percent read scientific literature. But there is another side to these statistics. Forty-three percent of the scientists admitted that they had not been reading scientific-technical nonfiction and that they had not followed scientific achievements closely. This might explain their belief that scientists were not as competent as the public thought they were. Also, scientists may have had higher expectations for the scientific community than the rest of the public did. Their disaffection with the quality of Soviet science and technology may have been tied very closely to their

---

[30]Almost two-thirds of the emigres said that the Soviet government was spending too little on health and agriculture.

disaffection with the Soviet Union and their decision to emigrate.[39]

The attentive public identified in this study was once part of a larger attentive public toward science and technology in the USSR. Although we have no comparable statistics on the proportion of the Soviet population that follows scientific achievements closely, we would probably find that the characteristics of the Soviet attentive public would be similar to the characteristics discussed here. Both on a theoretical and an empirical level, one could argue that education, occupation, urban residence, age, gender, and religiosity are important factors in the development of attentiveness to organized science in the USSR. It is problematic, however, to speculate about the Soviet attentive public sharing the attitudes of the emigre attentives toward science, scientists, and science policy. Similarly, one could question whether Soviet scientists would agree with the emigre scientists in their assessments of Soviet scientific and technical capabilities. Finally, we do not know if citizens in the USSR would demonstrate the same degree of support for unrestricted scientific research and respect for scientific leaders, while being skeptical about the ability of science and technology to solve social and economic problems.

Rather than make speculative comparisons with the attentive public in the USSR, it might be more fruitful, at this

---

[39]There is a possibility too that emigres in professional occupations may downgrade the quality of their employment sector in the USSR as a personal validation of their decision to leave.

stage of our analysis, to conclude with some questions that can affect the interpretations of data in other portions of the Soviet Interview Project. Can we identify an attentive public for different areas of public policy? Is there a segment of the emigre population that was highly interested in, and knowledgeable about, other social issues? How does attentiveness to public issues relate to the political socialization experienced by the emigres before they left the USSR? Do the emigres show a consistent preference for programs that have domestic social value? Does the emigre population generally make a distinction between their support for professional elites and their skepticism about the contribution of those elites to the solution of social problems? Does this reflect a serious discrepancy between the high prestige of institutions and low public confidence in system performance? Such questions remind us that the issue of attentiveness to science and technology is not an isolated one, but is part of a broad range of issues that characterize the citizen's relationship to public policy.